KAZAKOV, V.D.; KUZNETSOV, O.P.

List of foreign literature on relay devices and finite automata for 1958. Avtom. i telem. 21 no.9:1332-1338 S '60.

(MIRA 13:10)

(Bibliography-Automatic control)

33505

S/562/61/000/009/005/012 D201/D302

16.6400 (1024, 1121, 1329, 2403)

AUTHOR:

Kuznetsov, O. P.

TITLE:

Asynchronous logical nets

SOURCE:

Akademiya nauk SSSR. Laboratoriya sistem peredachi informatsii. Problemy peredachi informatsii. No. 9, 1961,

Elementy sistem avtomatiki, 103-115

TEXT: The author gives an analysis of a logical net in which the delays are not equal and which he calls asynchronous nets. Two types of binary elements are introduced: a) Logic elements and b) elements of delay which operate as follows: The inputs and the production of outputs are continuous. The value of the output of a logic element at instant t is represented by a certain logic function of its inputs at instant t. The delay element has one input Y. 1) The value of the delay output y(t) at instant t is given by 1) y(0) = c(c = 1 or c = 0); 2) y changes at instant  $t + \mathcal{T}$  from 0 to 1 (1 to 0) only if at the instant t Y has changed from 0 to 1 (or 1 to 0) and remained unchanged during the interval from t to  $t + \mathcal{T}$ .

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Asynchronous logical nets

33505 S/562/61/000/009/005/012 D201/D302

T is called the delay time. The net obtained from elements of type a) and b) by using the rules of forming "regular construction nets" is called the asynchronous logical net (ALN). The sequence of input signals is called the input sequence, if to every two adjacent signals in the sequence there corresponds two last periods. The state of the ALN at instant t is an orderly sequence  $y_1(t), \ldots, y_n(t)$  at instant t of outputs from the delays. The time interval quence of n-dimensional vectors 0 or 1, is called the period. The sequence. The ALN correspond to relay operated circuits with delays figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. A. W. Brooks and G. B. Wright, The theory of logical nets, Proc.

Card 2/2

KAZAKOV, V.D.; KUZNETSOV, O.P.

List of Russian works on the theory of switching circuits and finite automata for 1959. Avtom. i telem. 22 no.2:275-277 F '61.

(MIRA 14'4)

(Bibliography—Automatic control) (Bibliography—Switching theory)

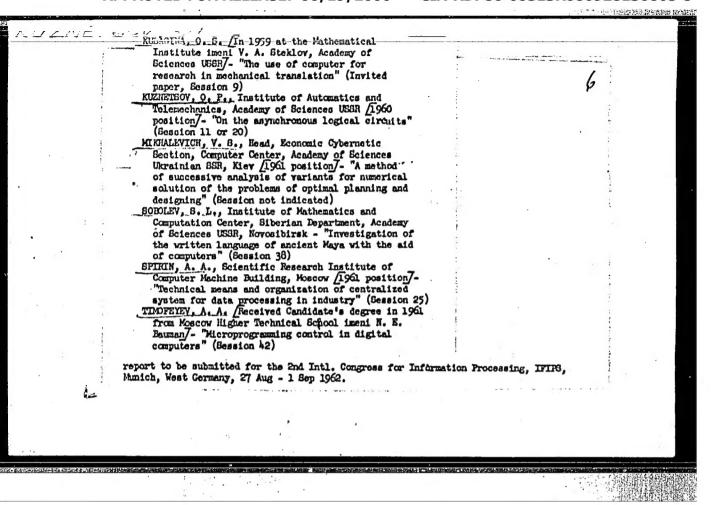
### "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

KUZNETSOV, O. P.

"On a certain class of regular events"

report submitted for the Intl. Symposium on Relay Systems and Finite Automata Theory (IFAC), Moscow, 24 Sep-2 Oct 1962.



# KAZAKOV, V.D.; KUZNETSOV, O.P.

List of foreign literature on the theory of switching devices and finite automata for 1959-1960. Avtom. i telem. 24 no.5: 699-712 My '63. (MIRA 16:6)

(Bibliography—Switching theory)
(Bibliography—Automatic control)
(Bibliography—Electric relays)

\$/0000/63/000/000/0074/0099

AUTHOR: Kuznotsov, O.P.

TITLE: Relay devices and finite automata

SOURCE: AN SSSR. Strukturnaya teoriya releyny\*kh ustroystv (Structural theory of relay devices). Moscow, Izd-vo AN SSSR, 1963, 74-99

TOPIC TAGS: control system, automatic control, feedback, relay, automaton, finite automaton, black box problem

ABSTRACT: The article deals with several fundamental results achieved in the theory of automata and their interpretation in terms of relay devices. In the first section of the paper, the author has analyzed different models of finite automata, the concept of the event and the formulation of the problem of synthesis. It is shown that the evolution of the theory of such automata began with the investigation of abstract nerve nets (W. McCulloch, W. Pitts. A logical calculus of ideas immanent in nervous activity. "Bull. Math. Biophys.", v. 4. S. 1943, p. 115-123; S. Kleene. Representation of events in nerve nets and infinite automata. Automata Studies Princeton, 1956). The concept of the "finite automaton" (a term introduced for the first time by S. Kleene) is examined.

Card 1/

The Moore model (Moore sequential machine) is discussed and described (E. Moore. Gedanken-experiments on sequential machines. Automata Studies. Princeton, 1953) and the Mealy model is defined (G. Mealy. A method for synthesizing sequential circuits. "Bell System Tech. J," v. 34, no. 5, p., 1045-1079). The work of Yu. T. Mendeleyev on events representable in finite automata is placed in proper perspective in terms of the general discussion of the problem (Yu. T. Mendeleyev. O klasse soby\*tiy, dopuskayushchikh predstavleniye v konechnom avtomate. Sb.-{"Avtomaty\*", dobavleniye 2, 1956). The application of the flow table, introduced by D. Huffman (D. Huffman. Synthesis of sequential switching circuits. J. Franklin Institute, v. 257, no. 3, p. 161-190; no. 4. p. 275-303, 1954), to the investigation of sequential relay devices is discussed and the use of such tables is described. Various definitions of an "event" are given. These definitions are taken, for the most part, from the writings of Kleene and Mendeleyev. In this connection, the importance of the concept of "regularity" (in terms of a regular event) is shown to be determined by the following two theorems: 1) For every regular event there exists a finite automaton to represent it; 2) Every event representable in some finite automaton is regular. Both theorems are proven and discussed. Further theorems (again taken primarily from the work of S. Kleene referenced above) are analyzed in terms of the algorithmization of abstract automata synthesis according to a given finite system of regular events; for example: For every definite event there

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exists a nerve net without loops; and, for every given nerve net without loops and every given internal neuron of this not, excitation of this neuron is equivalent to the advent of some definite event. The work, in this area, of V. M. Glushkov (V. M. Glushkov. Ob odnom algoritme sinteza abstraktny\*kh avtomatov. Ukr. matem. zhurnal, no. 2, 1960) is considered, along with an analysis of the technical applications of the theory of abstract nerve nets to the theory of logical circuits. Logical and delay elements are considered, and it is shown that the physical realization of logical nets is found in devices with pulse condition, in which the transmission of information is possible in one direction only. The author notes that, after the problem of representability had been solved in principle (by S. Kleene), two fundamental problems of automata synthesis have emerged: the search for various languages in which to write the events and the construction of automata to perform assigned operating conditions with a minimal number of states. An analysis is given of certain of the results achieved in this area by Yu. T. Mendeleyev, N. Ye. Kobrinskiy and B. A. Trakhten. brot (N. Ye. Kobrinskiy, B. A. Trakhtenbrot. O postroyenii obshchey teorii logicheskikh setey. Sb. "Logicheskiye issledovaniya", 1959), A. Church in a number of articles, E. Berkley (E. Berkley. The algebra of states and events. "Amer. Math, Monthly", v. 78, no. 4, 1954) and others. The author's view of this problem area may, perhaps, be summarized as follows: In the synthesis of single-cycle devices, for the inscription of the operating conditions a standard language is employed - a Boolean function, assigned in the form of a formula or a table. The problem of synthesis thus is

reduced to one of minimization. For automata, synthesis becomes more complex. While for single cycle devices it is always possible to assign a finite list of input symbols and corresponding outputs, the list of possible symbol sequences (that is, an event) may be infinite, and its structural or design assignment resolves itself to the problem of devising (constructing) a language in which infinite lists are given by finite formulae. The second source of complexity is seen by the author in the fact that not all events are susceptible of representation in an automaton - whence the second requirement of the language: in it it must be possible to distinguish representable events from those which cannot be represented. In the language of regular events, this problem is solved in a simple fashion: non-representable events are not described in it; that is, the very fact that a formula exists which corresponds to a certain event is evidence of the representability of that event. However, the author notes, this is not always the case. For example, in a language in which it is possible to describe all events (such a language will contain recursive definitions) the problem of recognizing the representability of events cannot be solved algorithmically. With respect to the advantages of the languages proposed by the various authors and considered in this article by way of review, that is, the possibilities of a simple transition from a verbal formulation of the conditions of operation to an economical base formula, it is, in the author's view, senseless to search for a universally simple language, since problems will always be found which can be more simply described by

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another language. The selection of one language over another will in all likelihood be determined not by individual and separate problems, but by the possibility and ease with which a large number of different working conditions can be classified by the terms of the particular language. The second part of the article deals with the analysis and minimization of finite automata. The so-called "black box" problem is considered, with the author presenting the results, employed, as he claims, without strict proof, by Huffman, in the formulation of G. Mealy. .. The author concludes that, according to the theory of finite automata, a relay contact system is a particular form of finite automaton. The circuitry of the automaton is derived by assigning to each state a binary number representing an ordered set of intermediate element states. Since this attribution is arbitrary (with the limitation that one number cannot be ascribed in two states), corresponding to an automaton, given by a flow table, will be an infinite number of devices, different in structure but equivalent in action. The particular attribution depends on our requirements of the structure of the device: do we wish completely to eliminate race conditions, obtain a maximally simple logic part of the device, achieve protection against a given number of faults on the part of the elements of the device, etc. It is, however, preferable to minimize the number of states before the attribution. In this case, all methods of finite automata minimization are applicable to relay-contact devices. On the other hand, the methods of synthesis existing in the theory of automata cannot be unconditionally applied to such devices, since these methods effectively synthesize not the abstract finite Card

automaton, that is, the flow matrix (or table), but a particular instance of the finite automaton - the logical net; that is, a synchronous automaton. Asynchronous automata, however, (particularly, relay-contact devices) differ from the synchronous in a number of properties, connected with the fact that asynchronous automata operate not in pulse, but in potential mode. In sum, the fundamental problems of the first step in the synthesis of relay-action devices (ending with the coding of the states) may, in the opinion of the author, be formulated as follows: 1) The search for effective logico-mathematical languages which will make it possible to write the operating conditions in terms of input and output sequences and to obtain, from this method of writing, tables which will define the automaton; that is, a state table (flow table) and output table. 2) The minimization of the flow table of the automaton, for which not all input sequences are permissible.

3) Optimal state coding by binary numbers in order to reduce the number of logical elements of the automaton (in the case of a relay-contact system - the minimization of the contact part), and to secure the construction of reliable structures and the elimination of race conditions. Orig. art. has: 11 tables, 11 formulas and 12 figures.

ASSOCIATION: None

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6/7

POSTCARD

8/0000/63/000/000/0100/0109

ACCESSION NR: AT4031765

AUTHOR: Kuznetsov, O. P.

TITLE: One class of regular events

SOURCE: AN SSSR. Strukturnaya teoriya releyny\*kh ustroystv (Structural theory of relay

devices). Moscow, Izd-vo AN SSSR, 1963, 100-109

TOPIC TAGS: control system, automatic control, relay, regular event, nerve net, finite

automaton

ABSTRACT: The concept of the regular event was introduced by S. Kleene (Representation of events in nerve nets and finite automata. Princeton, 1956), who demonstrated that the class of regular events coincides with the class of events which may be represented in a finite automaton. This result was later refined (V. M. Glushkov. Ob odnom algoritme sinteza abstraktny\*kh avtomatov. Ukr. matem. zhurnal, no. 2, 1960) and it was shown that for any system of regular events, containing N letters of the input alphabet, an automaton can be constructed to represent this system, with a number of states < 2N + 1. While it

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ACCESSION NR: AT4031765

can easily be demonstrated that the number of states can be reduced by a factor of four, its exact value is as yet unclear. Noting the interest in detarmining the subclasses of regular events with a simpler estimation of the number of states of the corresponding automatic devices, the author has given such an estimate in the present article for a class of definite (in the sense of Kleene; see reference above) occurrences; that is, occurrences of the type (in the sense of Kleene; see reference above) occurrences; that is, occurrences of the type (in the sense of Kleene; see reference above) occurrences; that is, occurrences of the type (in the sense of Kleene; see reference above) occurrences; that is, occurrences of the type (in the sense of kleene; see reference above) occurrences; that is, occurrences of the type (in the sense of the type (in the sense of the problem rests on the assumption that the automaton tains no iterations. The approach to the problem rests on the assumption that the automaton diagram (flow table), that is, by an oriented graph, the apices is represented by a transition diagram (flow table), that is, by an oriented graph, the apices of which correspond to the states, and the ribs — to the transitions from one state to the other: Corresponding to each such graph the author postulates a matrix C of unions and a other: Corresponding to each such graph the author postulates a matrix C of unions and a other: C\* of paths (O. P. Kuznetsov. Releyny\*ye ustroystva i konechny\*ye avtomaty\* (this matrix C\* of paths (O. P. Kuznetsov. Releyny\*ye ustroystva i konechny\*ye avtomaty\* (this collection)). Element C;; of matrix C is the union of the weights of all the ribs leading from s; to s;. It from state s; to state s; element c;; is the union of all the paths leading from s; to s;. It is evident that c; c;. In the matrix of the automaton for any i, j, and k we have c;; cik. This ratio expresses the condition of unambiguity of the transitions in the automaton.

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where  $A_1, \ldots, A_n$  are formulas containing no iterations;  $\langle D \rangle$  is a set of all the words in the input alphabet. Then the minimum number of states of an automaton representing system (5) by outputs  $1, \ldots, q_n$ , respectively, will not exceed N+1, where N is the total number of letters in the divergent form of the formula

 $A_1 \vee \ldots \vee A_n \qquad (6)$ 

The idea of the algorithm for constructing this automaton is contained in the following evident lemma: Let there be given an event A and an automaton, in which there is separated an initial state  $s_0$  and a subset of states F, such that: 1) for any state s of the automaton every word  $P_A(A)$  shifts the device from state s to  $s_F \in F$ ; 2) every word which shifts the device from  $s_0$  to  $s_F$  can be represented in the form  $P_1P_A$ , where  $P_1 \in A$ . Then the given automaton represents the occurrence A by a set of states F. The steps involved in this algorithm are discussed in the article, another lemma is proposed and examples are given in the concluding section. Orig. art. has: 2 figures, 5 tables and 16 formulas.

ASSOCIATION: none

SUBMITTED: 14Nov63

SUB CODE: IE, DP

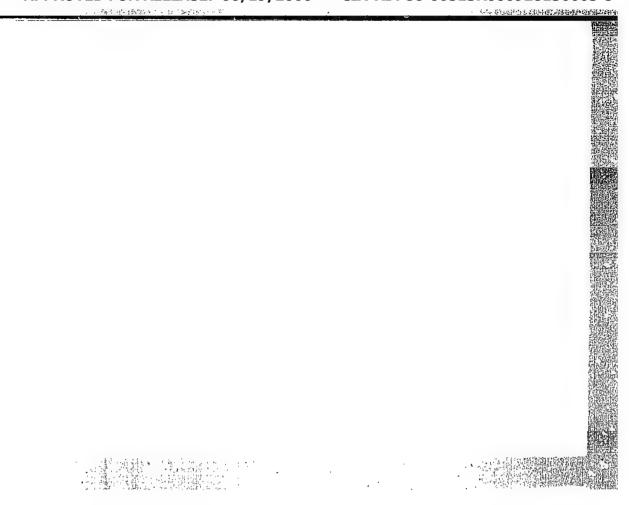
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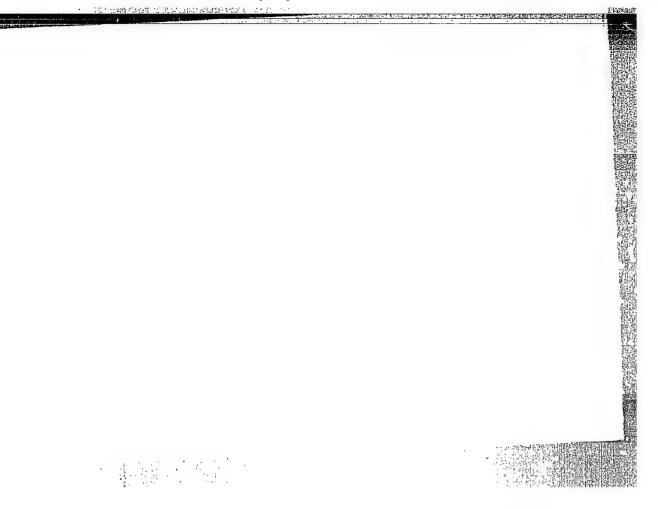
DATE ACQ: 16Apr64

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NR REF SOV: 003

OTHER: ,,001





# KUZNETSOV, C.P. (Moskva)

Representation of regular events in asynchronous automata. Avtom. i telem. 26 no.6:1086-1093 Je '65. (MIRA 18:7)

# KUZNETSOV, O.P. (Moskva)

Time analysis of autonomous asynchronous logical nets. Avtom. i telem. 26 no.5:861-865 My '65.

(MIRA 18:12)

1. Submitted November 20, 1964.

# Steady improvement of work organization. Rech. transp. 21 no.12:7 D'62. (MIRA 15:12) 1. Predsedatel' portovogo komiteta Astrakhanskogo porta. (Inland water transportation—Employees)

KALININ, A. (poselok Mel'nichnyy Ruchey, Leningradskoy obl.); POPKOV, V., inzh. (Khar'kov); PERETS, F. (Bronnitsy, Moskovskoy obl.); KUZNETSOV, P. (Leningrad); MATVEYENKO, I., mekhanik (Alatyr'); KALINICHENKO, M. (Leningrad); IKKERT, G. (Otradnyy, Kuybyshevskoy obl.); DUDIKOV, N.; BUKANOV, A.

Readers suggest. Za rul. 21 no.7:18-19 Jl '63. (MIRA 16:8)
(Motor vehicles—Technological innovations)

KUZNETSOV, P.A., student V kursa; FILONETS, V.I., student V kursa

Using experience acquired in the Moscow Basin for improving stoping in Tula and Lipetsk region iron mines. Nauch.rab.stud. GNSO MGI (MIRA 11:11) no.5:37-53 157. (Moscow Basin-Stoping (Mining)) (Tula Province-Iron mines and mining) (Lipetsk Province-Iron mines and mining)

- 1. KUZNETSOV, P. A.
- 2. USSR (600)
- 4. Oak Krasnodar Territory
- 7. 50 years of raising oak plantings in steppe forestry stations of Krasnodar Territory. Les. khoz. 6, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

MAL'TSHV, T.; KUZNETSOV, P.

New findings at the Shadrinsk Agricultural Experiment Station. Mauka 1 pered. op. v sel'khoz. 18 no.2:35-39 F '58. (MIRA 11:3)

1. Direktor Shadrinskoy sel'skokhosyaystvennoy opytnoy stantsii pri kolkhoze "Zavety Ienina," Kurganskiy rayon (for Mul'tsev). 2. Zanestitel' direktora po nauke Shadrinskoy sel'skokhosyaystvennoy opytnoy stantsii pri kolkhoze "Zavety Ienina," Kurganskiy rayon (for Kusnetsov).

(Agricultural research)

### KUZNETSOV, P.

Chemical weed control. Nauka 1 pered. op v sel'khos. 9 no.6:39-41 Je '59. (MIRA 12:9)

1. Zamestitel direktora Shadrinskoy opytnoy stantsii pri kolkhore "Zavety Lenina."

(Herbicides)

KUZNETSOV, P. A.

Kostroma Province - Fruit Culture

Michurin fruit growers of Kostroma Province. Sad i og., no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, 1953, Unclassified.

### "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

KUZNETSOV. P.A.

Michurin's follower, plant breeder N.V. Kuz'min; on the 50th anniversary of his death. Trudy TSGL 6:587-592 '57.

(Kuz'min, Nikanor Vonifat'evich, 1854-1907)

# KUZNETSOV, P.

Effect of parental varieties on the transmission of features to progeny in horticultural crops. Agrobiologiia no.2:228-233 Mr-(MIRA 15:4)

1. Stavropol skaya opytnaya stantsiya po sadovodstvu, g. Georgiyevsk.

(Stavropol Territory—Fruit culture)

## KUZNETSOV P.A. monter

Location of damages in single-strand power cables with a high-frequency receiver using and electroacoustic method. Energetik 12 no.11:32-34 N '64 (MIRA 18:2)

FAYN, A.I., inzh.; UGARKIN, B.K., inzh.; KUZNETSOV, P.A., inzh.

Automatically-controlled sandslinger, model PN-40. Lit. proizv.
no.1:14-19 Ja '66. (MIRA 19:1)

# KUZHETSOV. P.F.

Setting up and repairing of nonsifting chain grate furnaces. Sakh. prom. 30 no.7:23-25 Jl 156. (MLRA 9:11)

1. Cherkasskiy rafinal'nyy savod.
(Furnaces--Grates)

MAKASHEV, A.P.; KUZNETSOV, P.G., red.; SLUZHITEL', Ye.I., tekhn.red.

[Methods of prolonging the storage of refrigerated fish]
Sposoby udlinenia srokov khranenia okhlashdennoi ryby.
Moskva, Vses.in-t nauchm.i tekhn.informatsii, 1958. 36 p.
(MIRA 13:4)

h...Storner

(Fish--Storage)

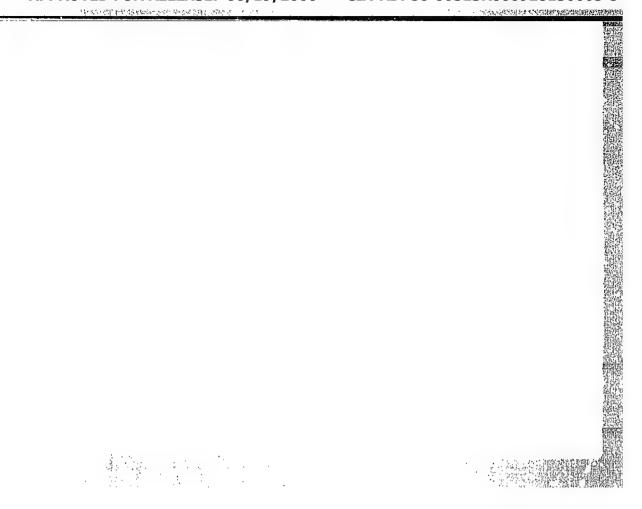
KAZNACHEYEV, V. F. (Novosibirsk); KUZNETSOV, P.G. (Novosibirsk); NABIULIN, H.J. (Novosibirsk); SUBBOTIN, M.Ya. (Novosibirsk)

Some problems of the quantum biology and problems of the communication of information in biological systems. Avtometriia no.2:3-10 165. (MIRA 18:9)

KUZNETSOV, P.O.

Ceminar on chemical cybernetics. Zav.lab. 28 no.3:336-337

(Cybernetics--Congresses) (Chemistry, Technical)



KHALAMEYZER, Mikhail Borisovich; KUZNETSOV, P.G., ved. red.; TKACHENKO, L.K., tekhn. red.

[Integrating devices of automatic compensators; survey of foreign literature] Integriruiushchie ustroistva avtomaticheskikh kompensatorov; obzor zarubezhnoi tekhniki. Moskva, GOSINTI, 1962. 14 p. (Tema 6) (MIRA 17:4)

## "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

SCTB L 32697-66 EWT(1) ACC NRI (N) SOURCE CODE: UR/0410/65/000/002/0003/0010 AP6015232 AUTHORS: Kaznacheyev, V. P. (Novosibirsk); Kuznetsov, P. G. (Novosibirsk); ሬና Nabiulin, M. S. (Novosibirsk); Subbotin, M. 1a. (Novosibirsk) ORG: none TITLE: Some problems of quantum biology and problems of information transmission in biologic systems Avtometriya, no. 2, 1965, 3-10 SOURCE: TOPIC TAGS: biology, quantum theory, tissue physiology, cell physiology, information storage and retrieval, information theory, data transmission, photon, blood ABSTRACT: Theoretical prerequisites for information transmission in biologic systems by means of quantum fluxes are given. The ultraweak luminosity of blood and a nerve is recorded with a photon counter. The problem includes mechanisms for coding various factors of the medium in quantum fluxes and recording this information in chemical structures and mechanisms for retrieving the recorded quantum information from the chemical structures and utilizing this information in enzymatic-synthetic processes. Comparison of data on physics, chemistry, and information theory with experiments in mitogenetic research indicates the possibility of the existence of a highly efficient system of information transmission UDC: 57+61:62.506.2

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in biologic systems with a rate of about  $10^{20}$  bits/sec per watt of consumed energy; the possibility of coding this information in chemical structures of varying complexity; and the possibility of effective conversion of this information to electric signals. The effect of one tissue culture on the growth of another through quartz glass is shown. Possible ways of using the mechanism of quantum information in technical devices are shown.

SUB CODE: 06/ SUBM DATE: 13Jan65/ ORIG REF: 033

Cord 2/2 BLG

KUZNETSOV. Pavel Grigor'yevich: GOLOVKO, Ye.V., otv.red.; CHASOVIKOVA, Z.I., tekhn.red.

[Filing machine] Opilovochnyi stanok. Alma-Ata, TSentr.in-t nauchno-tekhn.informatsii, 1959. 26 p. (MIRA 13:9)
(Machine tools)

BIRYUKOV, Vladimir Vasil'yevich; KUZNETSOV, P.G., ved. red.;
BARATOV, A.N., kand. tekhn. nauk, red.; TKACHENKO, L.K.,
tekhn. red.

[Brigade-type piling cranes and special-purpose piling devices in storerooms of industrial enterprises; survey of foreign equipment] Krany-shtabelery mostovogo tipa i spetsial nye shtabeliruiushchie ustroistva na skladakh promyshlennykh predpriiatii; obzor zarubezhnoi tekhniki. Moskva, GOSINTI, 1962. 20 p. (Tema 8) (MIRA 17:4)

ANDREYEV, Grigoriy Yakovlevich; SHERZHUKOV, Geliy Yefimovich; SHEVCHENKO, Valentin Yakovlevich; LEV, Arkadiy L'vovich; SPAVKIN, I.P., ved. red.; KUZUETSOV, P.G., ved. red.; PENGLER, K.I., red.

[Manufacturing and using glass-reinforced plastic pipes; a survey of foreign technology] Proizvodstvo i primenenie stek-loplastikovykh trub; obzor zarubezhnoi tekhniki. Moskva, GOSINTI, 1962. 89 p. (Tema 10) (MIRA 17:4)

KUZNETSOY, P.I.; RENGACH, V.N.; BANNOV, A.V., rod. izd-va; GURDZHIYEVA, A.M., tekhn. rod.

[Interesting new developments in technology]Interesnye tekhnicheskie novinki. Leningrad, Ob-vo po raspr. polit. i nauchm. znanii RSFSR, 1961. 110 p. (MIRA 15:12)

Sekretar' Oktyabr'skogo rayonnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza goroda Leningrada (for Kuznetsov).
 Zaveduyushchiy Kabinetom novoy tekhniki i peredovogo opyta Oktyabr'skogo rayona goroda Leningrada (for Rengach).
 (Technological innovations)

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KUZNETSOV, Pavel Ivanovich, kand. ist. nauk; RATGAUZER, Mark Yakovlevich, kand. ist. nauk; LAVRIKOV, Yu.A., kand. ekon. nauk, nauchnyy red.; UDAL'TSOV, O.A., red.; GURDZHIYEVA, A.M., tekhn. red.

[Role of the intelligentsia in the struggle for technological progres; some forms of cooperation between science and industry]
Rol intelligentsii v bor'be za tekhnicheskii progress; formy sodruzhestva nauki i proizvodstva. Leningrad, Ob-vo po raspr. polit.
i nauchn. znanii RSFSR, 1961. 64 p. (MIRA 15:2)
(Technology) (Research, Industrial)

KUZNETSOV. P.I.

Preparing clover sod for spring wheat in the trans-Ural region.
Zemledelie 7 no.4:26-30 Ap '59. (MIRA 12:6)

1. Shadrinskaya sel'skokhozyaystvennaya opytnaya stantsiya pri kolkhoze "Zavety Lenina," Shadrinskogo rayona, Kurganskoy oblasti. (Siberia, Vestern-Vheat) (Tillage)

## KUZNETSOV, P.I.

Effectiveness of the new tillage system in crop rotations of a trans-Ural region collective farm. Zemledelie 7 no.9:38-47 S 59.

(MIRA 12:11)

1. Shadrinskaya sel'skokhosyaystvennaya opytnaya stantsiya pri kolkhose "Zavety Lenina," Shadrinskogo rayona, Kurganskoy oblasti. (Shadrinsk District--Tillage)

Treating mestitis in cove. Veterinariia 34 no.5:54-55 My 157.

(MIRA 10:6)

1. Kalininskaya oblastnaya vetlechebnitsa.
(Udder--Diseases and pests)

KUZNETSOV, P. I., (Veterinary Surgeon)

"Treatment of Muscular Rheumatism."

Veterinariya, Vol. 38, No. 6, 1961. p. 57

Kuznetsov, P. I. - Kalinin oblast' Veterinary Hospital

RUZNETSOV, P.I.

Factory testing of the "RU-25" crane. Put' 1 put.khos. no.12:30

D'57.

1. Starshiy inshener Rel'sosvarochnogo tresta.

(Granes, derricks, etc.—Testing)

Changing the flood-line site in planning and building hydroelectric power stations. Sher.st.po geod. no.5:65-67 \*53. (MRA 9:7)

(Hydreelectric power stations) (Surveying)

AUTHORS: Kuznetsov, P. I., Tslaf, L. Ya. 57-28-6-15/34

TITLE: On the Problem of the Decay of a Liquid Jet Into Drops

(K voprosu o raspade zhidkoy strui na kapli)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6,

pp. 1220 - 1223 (USSR)

ABSTRACT: The process of the forming of drops during the decay of a

jet is being applied in an increasing degree in various fields of industry and agriculture, and frequently formed

the object of investigations (Reference 1-6). Experiments showed that during the decay of a jet into drops the following zones can be observed: 1) That part of the jet which is close to

the atomizer is compact, it has a glass-like appearance, some parts of the liquid are lacking, what is present are individual drops. 2) The divided part - the jet consists of separate parts of the liquid and of drops. 3) The atomized part - the jet has decayed into separate drops and consists only of drops.

This report shows how to study the factors determining the degree of dispersion of the atomized part. Proceeding from physical considerations it must be assumed that the following

Card 1/3 quantities are of importance for the process of atomization:

On the Problem of the Decay of a Liquid 57-28-6-15/34 Jet Into Drops

D-diameter of connecting piece, d- diameter of drops, p-density of the medium into which the liquid flows,  $g_{zh}$  density of the liquid atomized by the atomizer, p-pressure of liquid leaving the atomizer, g- coefficient of the kinematic

viscosity of the medium into which the liquid flows,  $V_{2h}$  - coefficient of the kinematic viscosity of the liquid which is atomized,  $\sigma$ - coefficient of the surface tension of the liquid, w- velocity of the emerging liquid, g - acceleration due to gravity. Most works deal with cases in which a certain liquid flows out into the air at normal atmospheric pressure. The experimental results obtained by studying the flowing out of water from the atomizing attachment of the tube into the air at normal pressure (figure 1) were worked out according to the interrelation

 $\frac{d}{d} = f$  (Fr,Ga). Working out of the experimental results in form of the function (6) is shown (figure 2). The experimental points relating to different Ga = const form a series of nearly

Card 2/3

On the Problem of the Decay of a Liquid Jet Into Drops 57-28-6-15/34

parallel straight lines, which are described by the formula  $100 \frac{d}{D} = AFr^n$ . Here it holds that 1g A = 4.71 - 0.590 1g GA; n = -0.508 + 0.0706 1g Ga. The formula (9) was obtained by the elaboration of experimental results by the method of the smallest squares (figure 3). It seems that the dependence (6) describes the decay process of the jet into drops in the 3.zone more accurately than was the case in previous works. The author thanks L. S. Eygenson (deceased) for his valuable advice. There are 3 figures and 10 references, 5 of which are Soviet.

SUBMITTED:

July 26, 1957

1. Liquid jets—Decay 2. Fluid flow—Viscosity 3. Drops—Development 4. Mathematics

Card 3/3

KU2NETSOV, P.I., veterinarnyy vrach

Treatment of muscular rheumatism. Veterinariia 38 no.6:57 Je 161. (MIRA 16:6)

1. Kalininskaya oblastnaya veterinarnaya lachebnitsa. (Rheumatic fever) (Veterinary medicine)

EWT(d)/FCC(w)/BDS--AFFTC--IJP(C) L 10794-63

ACCESSION NR: AP3001098

\$/0208/63/003/003/0419/0430

AUTHOR: Bol'shev, L. N.; Kuznetsov, P. I.

53 C

TITLE: On evaluating the integral p(x,y)

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 3,

TOPIC TAGS: approximation formula, p(x y) tabulation, Bessel function, probabil-

ABSTRACT: Using limit theorems for infinitely divisible distribution laws and in particular for noncentral  $\chi^2$  distributions, properties are established on the basis of which a series of new, sufficiently simple approximations of

 $p(x, y) = 2 \int_{0}^{x} ue^{-(u^2 + y^2)} I_0(2uy) du, \qquad (1)$ 

are derived (where Io (2uy) is a Bessel function of the zero order which occurs

Card 1/2

L 10794-63

ACCESSION NR: AP3001098

in many problems of mathematical physics, probability theory, and mathematical statistics), and a method of composing compact tables of p(x,y) values for all values of x and y is outlined. Necessary information concerning cylindrical functions is presented, and formulas establishing the relations between cylindrical functions and the noncentral  $\chi^2$  distribution function are derived and used to represent (1) as the product of an exponential function and the sum of two cylindrical functions. On the basis of this relation approximate formulas for evaluating (1) are derived, and means for making them more precise are analyzed. A detailed analysis of the tabulation of (1) according to the scheme proposed by A. N. Kolmogorov is presented. Orig. art. has: 39 formulas.

ASSOCIATION: none

SUBMITTED: 05Jul62

DATE ACQ: 10Jun63

ENCL: 00

SUB CODE: MM

NO REF SOV: 010

OTHER: 010

Card 2/2

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5"

KUZNETSOV, Pavel Ivanovich; RENGACH, Vitaliy Nikitich; PROTASOV, K.G., prof., nauchn. red.; MAKUKHIN, V.L., red.; GURDZHIYEVA, A.M., tekhn. red.

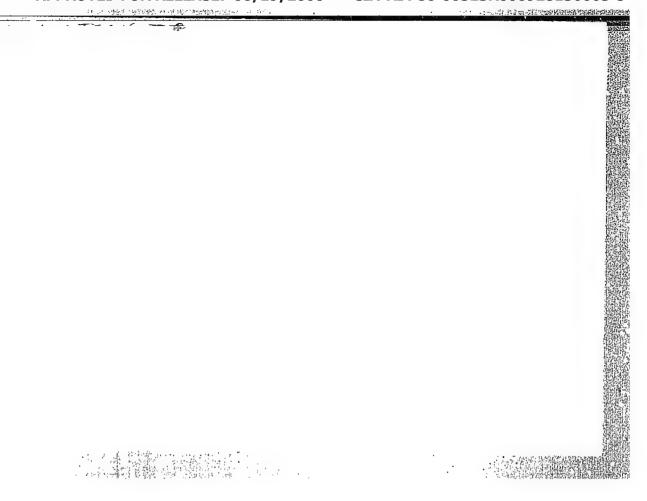
[Interesting technological innovations] Interesnye tekhnicheskie novinki. Izd.2., perer. i dop. Leningrad, Obvo po raspr. polit. i nauchn. znanii RSFSR, 1962. 206 p.

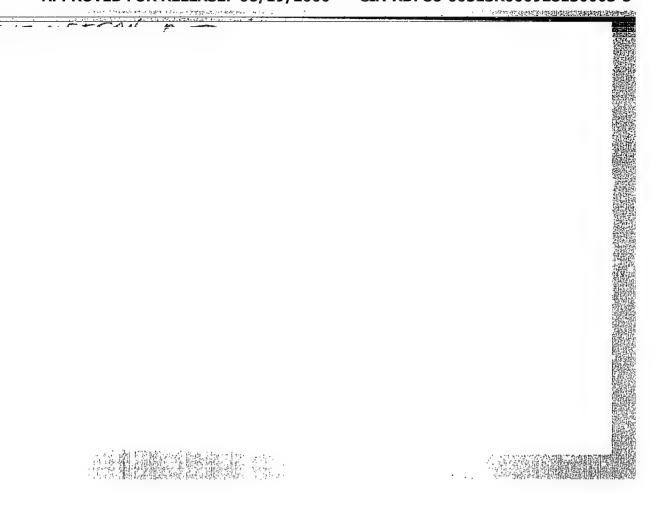
(MIRA 16:12)

1. Sekretar' Oktyabr'skogo rayonnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza g.Leningrada (for Kuznetsov). 2. Zaveduyushchiy Kabinetom novoy tekhniki i peredovogo opyta Oktyabr'skogo rayona g.Leningrada (for Rengach). (Technological innovations)

BELYAKOV, Vasiliy Mikhaylovich; KRAVTSOVA, Raisa Ivanovna; RAPPOPORT, Moysey Genrikhovich; KUZNETSOV, P.I., doktor fiz.-matem. nauk, prof., otv. red.; YAKOVKIN, M.V., red.; SIMKINA, G.S., tekhn. red.

[Tables of elliptic integrals] Tablitsy ellipticheskikh integralov. Moskva, Izd-vo AN SSSR. Vol.2. 1963. 783 p. (MIRA 17:2)

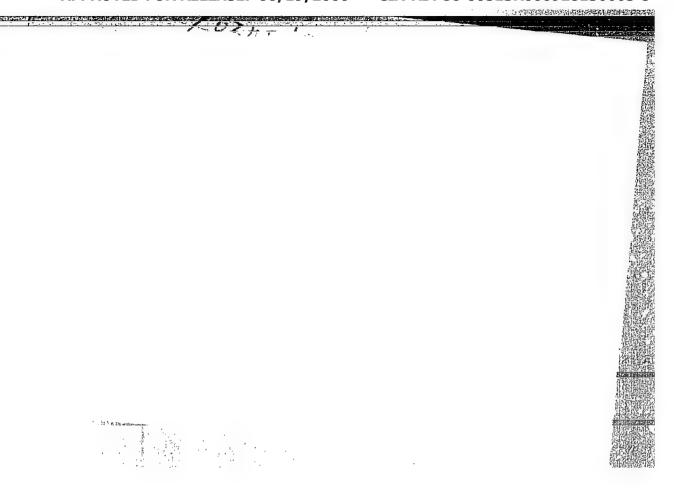




# "APPROVED FOR RELEASE: 06/19/2000

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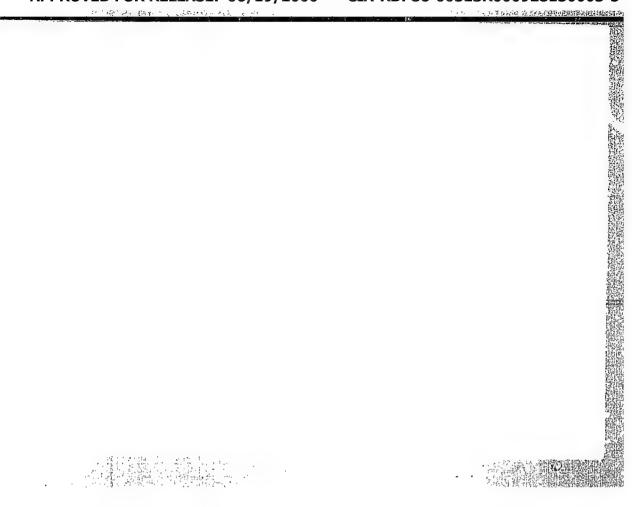
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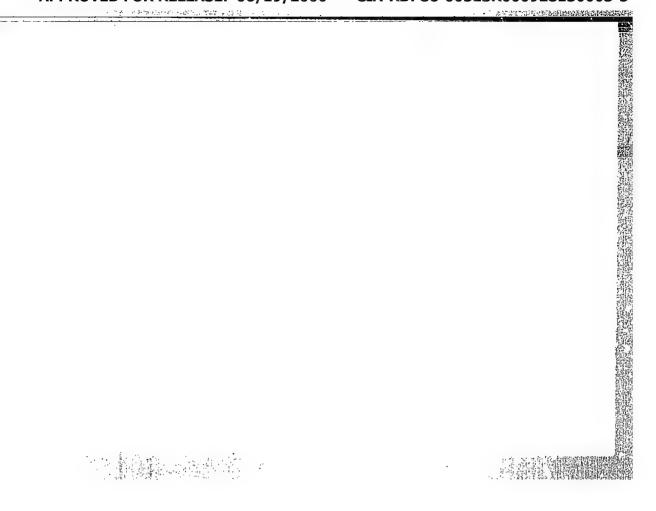


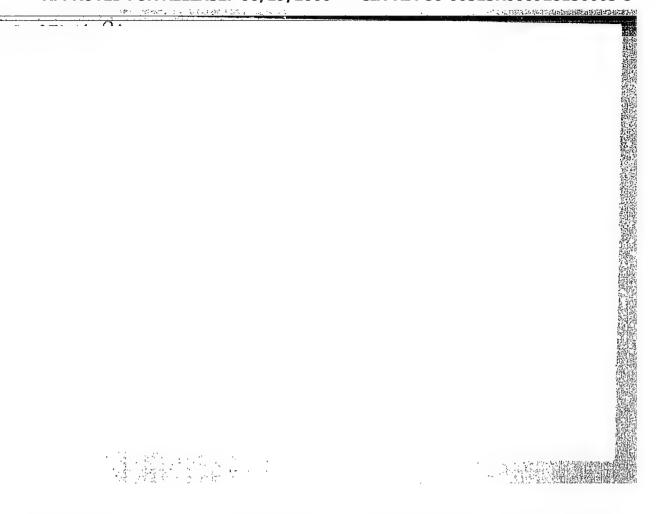
# KUZNETSOV, P.I.

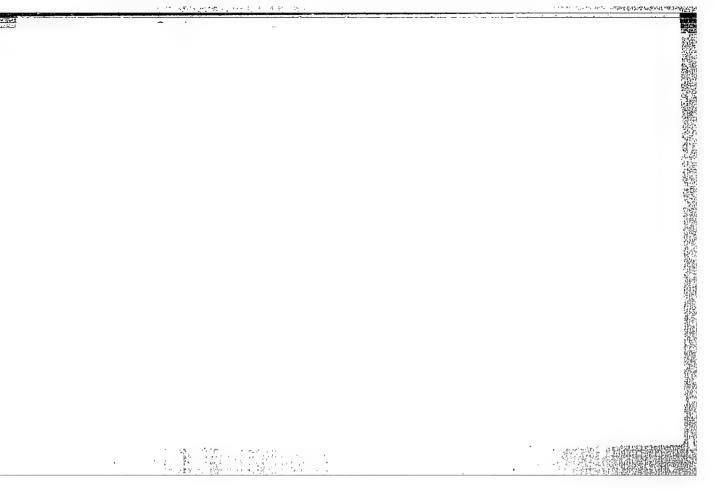
"Method of Koshi Indexes for Determining the Quantity of Roots for a Whole, Rational Function Within a Given Circuit. Deduction of the Routh Criterion for the Negativity of Real Parts of All Roots of a Characteristic Equation With the Use of the Koshi Index Method. Deduction of the Hurwitz Criterion from Routh's Criterion and Proof of the Equivalence of the Two Criteria."

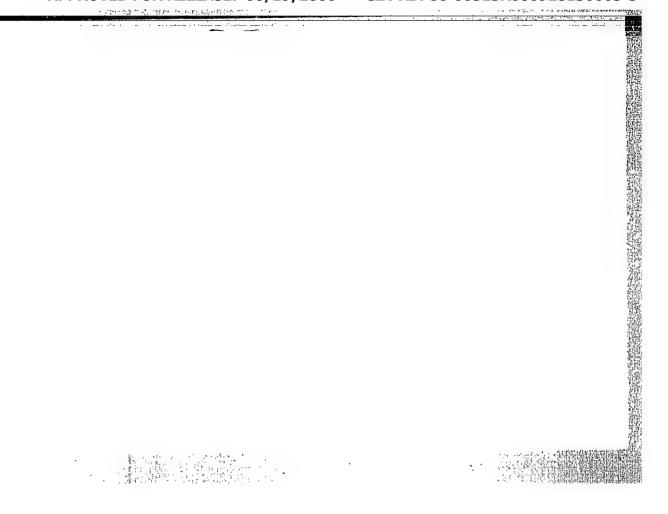
Notes of the Seminar on the Theory of Stability of Motion, No. 3, Red Banner Order of Lenin Military Air Engineering Academy imeni N. Ye.

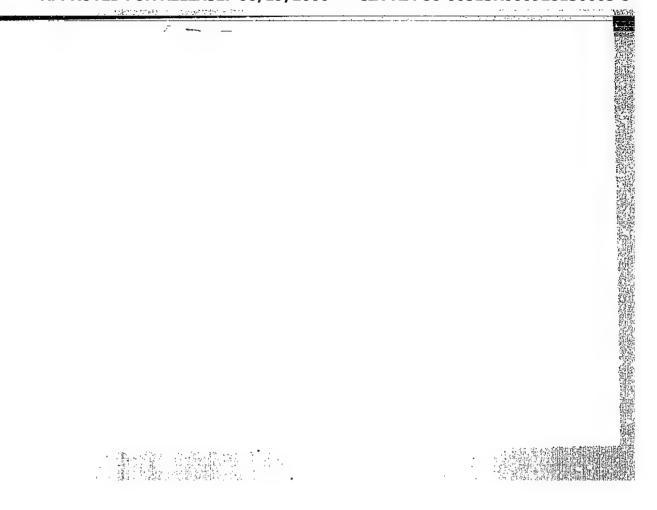








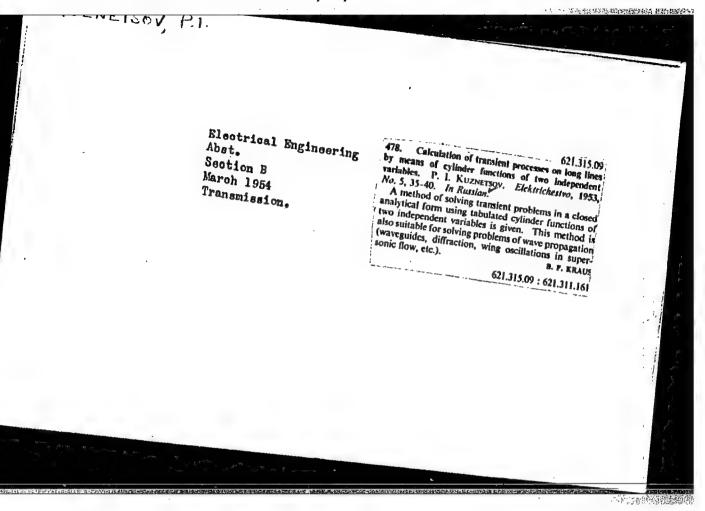




	the study of systems of linear differential exith const coeffs. Discusses Luxin's approx tegration of differential eqs by S. A. Chaply method and Luxin's calon of the secular eq (terminant).	Discusses how Luzin reduced N. Ye. Zhukovskiy and S. A. Chaplygin's eq of the motion of a train to du/ds = f1(u) + f2(s), which he showed possessed only one limiting soln for certain conditions on f1(u). Later works of Luzin were connected with f1(u). Later works of automatic regulation, involved that problems of automatic regulation, involved.	"M. M. Luzin's Works on Differential Equations and on Computational Methods," V. K. Gol'tsman, P. I. Kumnetsov "Uspekh Matemat Mauk" Vol VII, No 2, (48), pp 17-30	UBSR/Mathematics - Computational Nax/Apr
214752	tial equapprox in- Chaplygin's eq (de-	sessed ions on involving	ons and P. I.	Apr 52

## "APPROVED FOR RELEASE: 06/19/2000

### CIA-RDP86-00513R000928130003-5



KUZHETSOV, P.I. STRATONOVICH, R.L.

Long heterogeneous lines. Radiotekhnika 8 no.6:14-22 N-D '53.
(Radio lines) (Radio, Shortwave) (MIRA 11:6)

#### KUZNETSOV. P. I., STRATONOVICH. R. L., TIKHCHOV. V. I.

"Passage of Certain Random Functions Through Linear Systems", Avtomatika i Telemekhanida, Vol 14, No 2, 1953, pp 144-163.

Discusses linear systems in which the input and output of a signal is connected integrally by means of the kernel (the transfer function of a system), depending on the time and parameter.

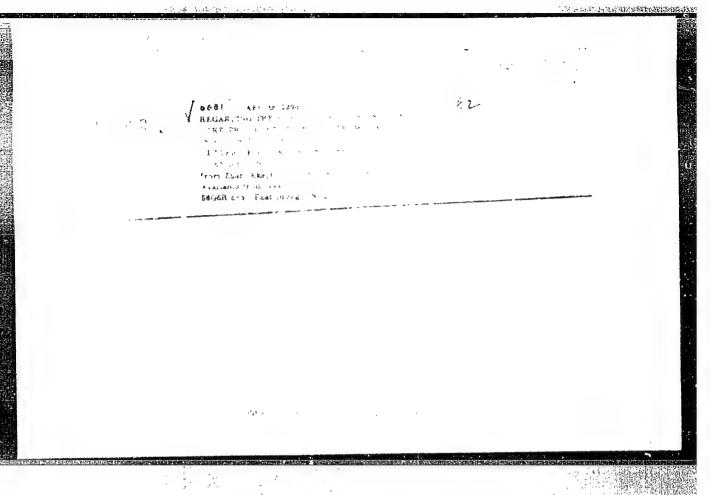
Determines generalized correlative functions a coefficients of expansion of characteristic functions of n-multiple distributions of probabilities and establishes the correlations, binding the output correlative functions to the input functions. For the case of stationary output signals the characteristics of proximity of certain functions of the density of probability (sharp attenuation and possession of one peak) to the density of Gaussian distribution is discussed. Other results arising from transient random signals through linear systems, may be found in in the works of A. N. Kolmogorov (Jubilee Collection, Acad Sci USSR, Moscow, 1947), where full analysis of the case of stationary disturbances and constant transmitting function of the system is given; cf. V. S. Pugachev (Izvestiva Akademii Nauk. Seriva Matematika. 1953, No 5, 401-420) and Zadeh (Proc. J. R. E., 1950, Vol 38, No 11, 1342-1345). (RZhMekh, No 11, 1954) SO: Sum. No. 443, 5 Apr. 55

KUZNETSOV, P.I. (Moskva); STRATCHOVIGH, R.L. (Moskva); TIKHOHOV, V.I., (Moskva).

Transmission of random functions through nonlinear systems. Avtom. 1
telem. 14 no.4:375-391 JI-Ag '53. (MIRA 10:3)

(Automatic control)

# "APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928130003-5



KUZNETSOV, P. I. "Non-Homogeneous Transmission Lines," Radio Tekh., July, 1954

### "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

KUZNETSOVEL KUZNETSOV, P. I. USSR/Electronics

FD 227

**计算机器操作** 

Card 1/1

Author

: Kuznetsov, P. I. and Stratonovich, R. L.

Title -

The optimum transfer between two different uniform long lines

Periodical

Radiotekhnika 9, 13-20, Mar/Apr, 1954

Abstract

Rules are given for selecting the optimum transfer between two uniform lines with aid of a length of nonuniform line. The external parameters of a four-terminal network which is equivalent to a nonuniform line can be more economically calculated with Riccati's differential equation for the coefficient of reflection than with A. L. Fel'dshteyn's method. Minimum reflected power in the given frequency band is used as a criterion for optimum line. Four refer-

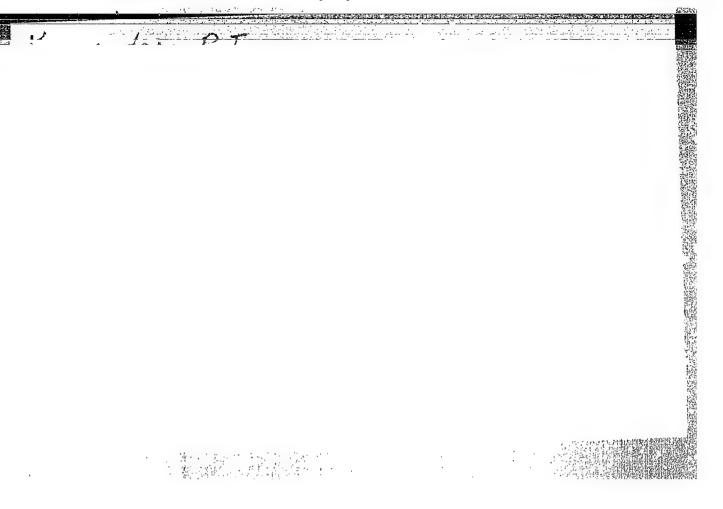
ences: 4 USSR.

Institution :

Submitted

September 27, 1952

CIA-RDP86-00513R000928130003-5" APPROVED FOR RELEASE: 06/19/2000



#### "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

USSR/Electronics - Wave Propagation along wires

FD-1056

Card

Pub 90-4/12

Author

P. I. Kuznetsov and R. L. Stratomovich

Title

Non-homogeneous long lines with variable propagation factor

Periodical

Radiotekhnika 9, 43-45, Jul/Aug 1954

Abstract

Results of previous papers by the same authors (Radiotekhnika 8, Nov/Dec 1953; 9, Mar/Apr 54) were obtained on the assumption that the propagation factor is invariable all along a line. In the present paper the authors show that this limitation can be removed by replacing the variables in telegraphs equations, while they retain all the formulae obtained in their previous works.

Three references; 2 USSR, 1953 and 1954. Tables.

Institution

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Submitted

27 September 1952

KUZNETSCY, P.I.

KUZNETSOV, P. I., STRATONOVICH, R. L., and TIKHONOV, V. I.

"Passage of Random Functions Across Nonlinear Systems," Avtomatika i telemekhanika, Vol 15, No 3, pp 200-205, 1954

Examines the nonlinear problem of the best approximation of some sunction f (t) by the method of choosing moment functions. When certain assumptions are made this problem reduces to the solution of a system of integral equations. One example is considered in which a system of algebraic equations replaces the integral equations. (RZhMekh, No 4, 1955)

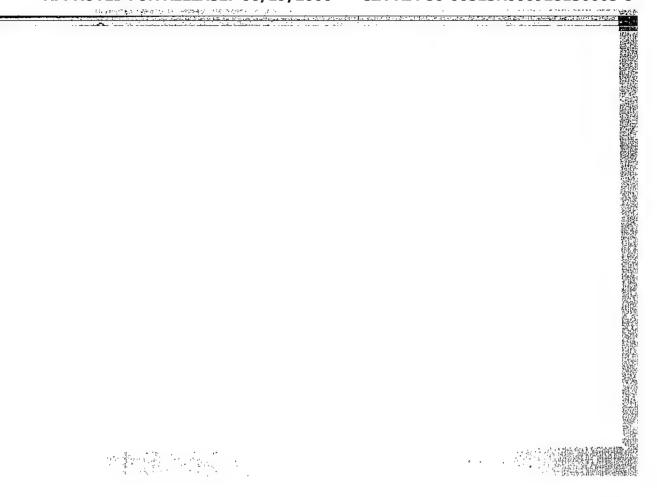
SO: Sum, No 606, 5 Aug 55

KUZNETSOV, P.I.; STRATONOVICH, R.L.; TIKHONOV, V.I.

Continuity of the products of probability functions. Zhur.tekh.
fiz. 24 no.1:103-112 Ja 154. (MLRA 7:2)
(Probabilities) (Mathematical statistics)

## "APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000928130003-5

Kuždejouv, r. i. FD-620 USSR/Physics - Brownian Motion Card 1/1 : Pub. 146-10/18 : Kuznetsov, P. I.; Stratonovich, R. L.; and Tikhonov, V. I. Author Title : Correlation functions in the theory of Brownian motion; Generalization of the Focker-Planck equation : Zhur. eksp. i teor. fiz. 26, 189-207, February 1954 Periodical Abstract : Generalized correlation functions are used in a theory of Brownian motion which goes beyond the framework of Markov processes and uncorrelated random functions. For a sufficiently short time of correlation a differential equation is derived which generalizes the equation of Focker and Planck. It is shown that in special cases the theory discussed in this article reverts to the more usual theory of Brownian motion. Institution : Moscow State University Submitted : July 10, 1953



#### "APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000928130003-5

KUZNET-OV,

AID P - 1451

.Subject

: USSR/Electricity

÷ij,

Card 1/2

Pub. 27 - 2/36

Authors

Kuznetsov, P. I, and Stratonovich, R. L., Moscow

Title.

: Electromagnetic phenomena in a two-wire system

Periodical: Elektrichestvo, 2, 5-13, F 1955

Abstract

In the first part of the article, the authors examine a symmetric two-wire line on which an opposite wave is impressed. A correction is found to the propagation constant which depends on the conductivity of the wires. Expressions for the electric and magnetic fields of the above wave are obtained in series form.

The first terms of the series represent the first harmonics which depend on the proximity of the wires. This permits restriction to a small number of harmonics. The method of investigation is also applied to an infinite multi-wire

AID P - 1451

Elektrichestvo, 2, 5-13, F 1955

g Card 2/2 Pub. 27 - 2/36

line. The authors demonstrate how to proceed to the successive higher approximations, attaining any desired accuracy. In the second part of the article, electromagnetic phenomena are examined in a line composed of two non-identical conductors. The wave in such a line appears to be a superposition of two partial waves spreading with different propagation constants. 7 references (1 German 1900, 6 Russian 1937-1954)

Institution: None

Submitted : Ji 18, 1954

USSR/Physics - Electric fluctuations

FD-2196

Card 1/1

Pub. 146-1/25

Author

Kuznetsov, P. I.; Stratonovich, R. L.; Tikhonov, V. I.

Title

The action of electric fluctuations upon the tube oscillator

Periodical:

Zhur. eksp. i teor. fiz. 28, 509-523, May 1955

Abstract

The authors consider the action of "slow" normal fluctuations upon a tube oscillator. They obtained expressions for the one-dimensional functions of the probability density for amplitude and phase. They indicate an approximate method for the calculation of the correlation functions for amplitude and phase. Their method of solving the behavior of a tube oscillator under the action of slowly varying fluctuations is based upon the application of the generalized Einstein-Focker equation (P. I.

Kuznetsov et alii, ibid. 26, 1954) and is somewhat different from earlier method (L. Pontryagin, A. Andronov, A. Vitt, ibid. 3, 1933; I. L. Bershteyn, Izv. ANSSR, ser. fiz. 14, 1950) for considering internal fluctuations. The authors thank Yu. B Kobzarev. Six references: e.g. A. A. Andronov and S. P Khaykin, Teoriya kolebaniy (Theory of oscillations),

State Technical Press, 1937.

Institution:

Moscow State University

Submitted

June 15, 1954

KUZNETSOV, P.1.

USSR / PHYSICS Subject

CARD 1 / 2

PA - 1590

AUTHOR

TITLE

PERIODICAL

BAKAEV, JU.N., KUZNECOV, P.I. The Mean Value Method and its Application to Some Honlinear Tasks

in Radio Engineering.

Radiotechnika, 11, fasc. 10, 3-12 (1956)

Issued: 11 / 1956

The generalization of the mean value method and its full mathematical foundations were given by N.N.BOGOLJUBOV (1945). A form, into which the initial differential equations of the system are put, takes up a certain space in his theory. These

=  $\mathcal{E} x_i$  (t,  $x_1$ ,  $x_2$ ,....,  $x_n$ ),  $i = 1, 2, \ldots, n$ E is the "small parameter". In the further course, and if nothing special is systems have the form dt mentioned, only a differential equation of the first order:

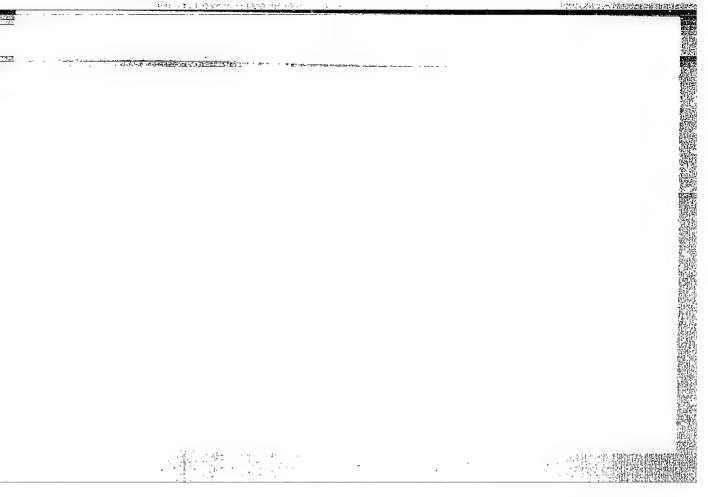
<u>dx</u> = €x(t, x)

is mentioned. BOGOLJUBOV generalized the procedure to a considerable extent and

defined averaging as follows:

 $\chi_o(x) = \lim_{x \to 0}$ 

In this form it can be applied to non-periodic functions and even to functions that have no oscillation properties. BOGOLJUBOV proved several theorems which belong to the most interesting cases found in practice. From these it follows



KUZNETSOV, P.I.; STRATOHOVICH, R.L.

Mathematical theory of correlated random points. Izv.AN SSSR.Ser. mat. 20 no.2:167-178 Nr-Ap '56. (MIRA 9:11)

1. Predstavleno akademikom A.N. Kolmogorovym.
(Distribution (Probability theory))
(Correlation (Statistics))

Quasi-moment functions in the theory of random processess. Teor. veroidt. i ee prim. 5 no.1:84-102 '60. (MIRA 13:10)

(Probabilities)

KULEBAKIN, V.S., akademik, otv.red.; BODNER, V.A., doktor tekhn.nauk, red.;

IVAKHNENKO, A.G., doktor tekhn.nauk; red.; ISHLINSKIY, A.Yu., akademik, red.; KACHANOVA, N.A., kand.tekhn.nauk, red.; KUZNETSOV, P.I.,
doktor fiz.-matem.nauk, red.; KUKHTENKO, A.I., doktor tekhn.nauk, red.;
PETROV, B.N., red.; POPOV, Ye.P., doktor tekhn.nauk, red.; ULANOV,
G.N., doktor tekhn.nauk, red.; KHHENOV, K.K., akademik, red.; CHIMAYEV, P.I., kand.tekhn.nauk, red.; CHUMAKOV, N.M., kand.tekhn.nauk,
red.; KHUCHOV, G.V., tekhn.red.

[Invariancy theory and its application to automatic devices] Teoriia invariantnosti i ee primenenie v avtomaticheskikh ustroistvakh; trudy soveshchaniia. Moskva, Akad.nauk USSR, Otd-nie tekhn.nauk, 1959. 381 p. (MIRA 13:7)

1. Soveshchaniye po teorii invariantnosti i eye primeneniyu v avto-maticheskikh ustroyatvakh, Kiyev, 1958. 2. AN USSR (for Ishlinskiy, Khrenov). 3. Chlen-korresp.AH SSSR (for Petrov). (Automatic control)

BAKAYEV, Yu. N.; KUZNETSOV, P.I.

Comparative investigation of consecutive and parallel methods of frequency division. Radiotekhnika 15 m.4:42-49 Ap 160.

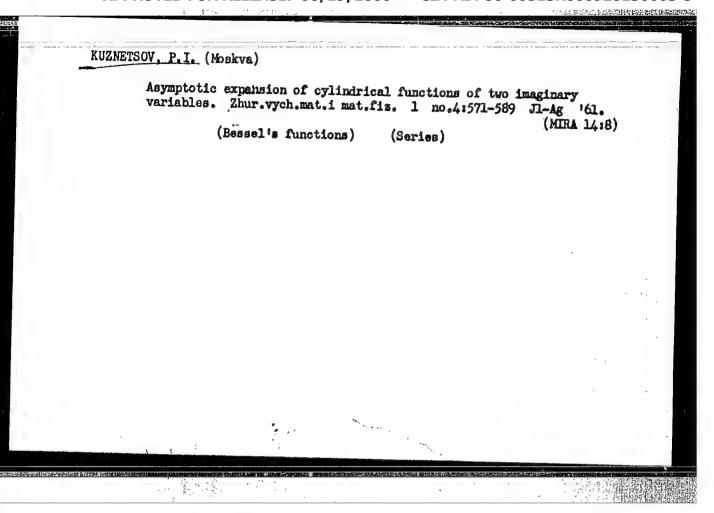
(MIRA 13:6)

 Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni A.S. Popova.
 (Frequency changers)

SHELKOVNIKOV, Feedosiy Alekseyevich; TAKAYSHVILI, Konstantin Georgiyevich; KUZNETSOV, P.I., prof., doktor fiz.-mat.nauk, red.; TAL'SKIY, D.A., red.; VORONINA, R.K., tekhn. red.

[Collection of exercises in operational calculus] Sbornik uprazhnenii po operatsionnomu ischisleniiu. Pod red. P.I. Kuznetsova. Moskva, Gos. izd-vo "Vysshaia shkola," 1961. 150 p. (MIRA 15:2)

(Calculus, Operational)



KUZMETSOV, P.I.; STRATOHOVICH, R.L.; TIKHONOV, V.I. (Moscow)

Some problems involving conditional problems and quasi-moment functions. Teor. veroiat. i ec. ALM. 6 no.4:458-464 '61. (NIRA 14:11)

(Probabilities)

BARK, L.S.; KUZNETSOV, P.I.; DITKIN, V.A., prof., otv. red.; ORLOVA, I.A., red.; KORKINA, A.I., tekhn. red.

[Tables of cylindrical functions of two imaginary variables] Tablitsy tsilindricheskikh funktsii ot dvukh mnimykh peremennykh. Moskva, Vychislitel'nyi tsentr AN SSSR, 1962. 263 p. (MIRA 15:7)

(Functions)

BELYAKOV, Vasiliy Mikhaylovich; KRAVTSOVA, Raida Ivanovna;
RAPPOPORT, Moisey Genrikhovich; KUZNETSOV, P.I., doktor fiz.matem. nauk, prof., otv. red.; YAKOVKIN, M.V., red.; ERUZGUL',
V.V., tekhn. red.; SIMKINA, G.S., tekhn. red.

[Tables of elliptic integrals] Tablitsy ellipticheskikh integralov. Moskva, Izd-vo Akad. nauk SSSR. Vol.1. 1962. 655 p. (MIRA 15:12)

(Functions, Elliptic) (Mathematics—Tables, etc.)

BARK, L.S.; BOL'SHEV, L.N.; KUZNETEOV, P.T.; CHEMENKOV, A.P.;
DITKIN, V.A., prof., otv. red.; CRLOVA, I.A., red.

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